Remarks

Reconsideration of this Application is respectfully requested.

Claims 36, 38-40, 42-44 and 48-50 are pending in the application, with claim 36 being the independent claim. Claims 69 and 70 are amended. Support for these amendments can be found at least at page 22, at lines 23-26 and 36-38, and page 23, lines 6-7.

Rejections under 35 U.S.C. § 112, 1st Paragraph

The Examiner rejected claims 69 and 70 under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicants respectfully traverse this rejection.

The Examiner stated that:

> [t]here is no support in the specification as originally filed for the method steps recited in claim 69 or 70. Regarding the specification, pages 22 and 24, said pages disclose partially conjugated polylysine and polylysine/transferrin conjugate, but do not disclose the scope of the claimed invention (eg. partially conjugated polycation, wherein the polycation is not polylysine and polycation/transferrin conjugate, wherein the polycation is not polylysine). In addition, the cited pages of the specification appear to disclose partially conjugated polylysine conjugated to a protein and not any molecule per se. There is no written description of the scope of the claimed invention in the specification as originally filed (e.g. the claimed invention constitutes new matter).

Paper No. 26, page 2. Applicants respectfully disagree with the Examiner. However, solely to advance prosecution and not in acquiescence to the Examiner's rejection, Applicants have

amended claims 69 and 70 to recite a "protein," and have amended the claims to recite a vaccine instead of a process.

With respect to polycations partially conjugated with a protein, there is indeed support in the specification. Applicants' specification states that:

> [t]he quantity of DNA in relation to the polycation which is optionally partly conjugated with a protein, e.g. in relation to pL, TfpL or a mixture of pL and TfpL, is preferably about 1:2 to about 1:5.

Applicants' specification, page 22, lines 36-38 through page 23, line 1. Therefore, there is full support and adequate disclosure in the specification. Claims 69 and 70, thus, do not add new matter. Accordingly, reconsideration and withdrawal are respectfully requested.

Rejections under 35 U.S.C. § 112, 2nd Paragraph

The Examiner rejected claims 69 and 70 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Applicants respectfully traverse this rejection.

The Examiner states that:

> [c]laim 69 is indefinite in the recitation of "partially conjugated with another molecule" because it is unclear what this means or encompasses. It is unclear if this refers to a particular method of conjugation (eg. partial versus completely attached to the recipient molecule) and it is unclear as to what parameters would be encompassed by a "partially" versus completely attached molecule.

Paper No. 26, page 3. Applicants respectfully disagree with the Examiner. Contrary to the Examiner's assertion, Applicants' specification clearly discloses the meaning and scope of a polycation at least "partially conjugated with a protein" that one of ordinary skill in the art would comprehend. Applicant's specification states that "some of the polylysine is in a form conjugated with transferrin (Tf) (namely transferrin-polylysine conjugate TfpL, for which reference is made to the disclosure of WO 94/21808), the mass ratio of pL:TfpL preferably

being about 1:1." Applicants' specification, page 22, lines 17-21. Furthermore, in examples 1 and 2, Applicants clearly disclose that tumor vaccines may contain both polylysine and transferrin-conjugated polycation. Therefore, these terms are fully described and do not need further explanation. Accordingly, reconsideration and withdrawal are respectfully requested.

Claim 69 has been amended to correct the antecedent error. Applicants thank Examiner for pointing out this error. Therefore, reconsideration and withdrawal are respectfully requested.

Rejections under 35 U.S.C. § 103

The Examiner rejected claims 36, 38-40, 42-44, 48-50 and 69-70 under 35 U.S.C. § 103(a) as allegedly being obvious over Nair *et al.*, *J. Immunological Methods 152*:237-243 (1992) in view of Fearon *et al.*, *Cancer Res. 48*:2975-2980 (1988), Townsend *et al.*, *Cell 39*:13-25 (1984), Van Der Bruggen *et al.*, *Eur. J. Immunol. 24*:2134-2140 and "prior art disclosed in the specification (see page 3)." Paper No. 26, page 7. Applicants respectfully traverse this rejection.

Applicants respectfully believe the remarks made in the Amendment and Reply Under 37 C.F.R. § 1.116, filed September 21, 2001, were sufficient to overcome and traverse each element of the rejection in the Office Action. Therefore, Applicants reiterate and incorporate by reference herein the remarks previously made. Applicants also wish to make the following additional remarks concerning this rejection.

Nair *et al.* teaches the incubation of tumor cells with lipopoly-L-lysine and ovalbumin. Applicants claim a tumor vaccine wherein tumor cells have been incubated with certain non-lipid organic polycations and peptides as opposed to the lipid polycation used in Nair *et al.* Thus, as previously stated, Nair *et al.* does not teach or suggest a tumor vaccine comprising first and/or second set of peptides incubated with non-lipid organic polycations. Consequently, Nair

et al. does not disclose every limitation of the claimed invention, such as, but not limited to, tumor vaccines, the administration of tumor cells and non-lipid polycations. Therefore, Nair *et al.* is seriously deficient as a primary reference upon which to base a *prima facie* case of obviousness.

Fearon *et al.* does not cure the deficiencies of Nair *et al.* As previously stated, Fearon *et al.* discloses transfection of DNA using calcium phosphate into tumor cells unlike the present invention which is directed to incubation of peptides in the presence of particular non-lipid organic polycations. Thus, Fearon *et al.* does not disclose the claimed invention. There is also no suggestion to combine the disclosures of Nair *et al.* and Fearon *et al.* Furthermore, one of ordinary skill in the art would not obtain Applicants' invention by combining Nair *et al.*'s *in vitro* antigen presenting system using ovalbumin and lipid polycations with Fearon's disclosed *in vivo* model using DNA transfected cells. Likewise, none of the other art relied upon the Examiner (Townsend *et al.*, Van Der Bruggen *et al.*, or the prior art disclosed in the specification on page 3) cures the serious deficiency of Nair *et al.*, as previously stated. Specifically, Townsend *et al.* teaches transfection of DNA into murine cells, while Van Der Bruggen *et al.* teaches the identification of a novel antigen, MZ2-Bb, from the MAGE-1 gene. None of the art discloses the claimed invention, notably the incubation of peptides with non-lipid polycations and there is no suggestion or motivation to combine such art to derive the claimed invention.

The Examiner further states that:

> [r]egarding applicants comments about the specification, both Nair et al. and Fearon et al. teach that the immunogenicity of tumor cells can be increased by adding additional exogenous antigens to said tumor cells. One of ordinary skill in the art at the time the invention was made would have a reasonable expectation of success of producing the claimed invention

> because Fearon et al. teach use of HA transfected tumor cells as a tumor vaccine, while Nair et al. teach that their method is an efficient means of sensitizing target cells for CTL lysis in the context of MHC class I.

Paper No. 26, page 5. Applicants respectfully disagree with the Examiner. Nair *et al.* and Fearon *et al.* disclose different compositions than the claimed invention and especially, to each other. Specifically, Nair *et al.* does not disclose tumor cells incubated with non-lipid polycations and Fearon *et al.* does not disclose tumor cells incubated with peptides. The Examiner does not thoroughly explain how one of ordinary skill in the art would obtain Applicants' claimed invention by combining them, notably, why one of ordinary skill in the art would have a reasonable expectation of success combining DNA transfected cells with an *in vitro* antigen presentation using lipid polycations. There is no clear scientific reasoning or no other objective evidence made by the Examiner to clarify this unlikely combination. Likewise, one of ordinary skill in the art could not derive Applicant's claimed invention even if these disclosures were combined.

Thus, the claims are not rendered obvious by any of the art relied upon by the Examiner. Accordingly, withdrawal of this rejection is respectfully requested.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all currently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Andrea Jo Kamage

Andrea Jo Kamage
Agent for Applicants
Registration No. 43,703

Date: 4/23/02

1100 New York Avenue, N.W.
Suite 600
Washington, D.C. 20005-3934
(202) 371-2600

Version with markings to show changes made

In the Claims:

Claims 69 and 70 are amended as follows:

69. (Once amended) The [process] tumor vaccine of claim 36, wherein said polycation is at least partially conjugated with [another molecule] a protein.

70. (Once amended) The [process] tumor vaccine of claim 69, wherein said [molecule] protein is a transferrin.